



DA3000 *Wide band discone aerial*

The DA3000 is a 16 element 'receive' wide band discone aerial providing a useable frequency coverage from 25MHz to 2GHz. Many of the 16 elements are of different lengths ensuring true wide band characteristics including one 'loaded' element to enhance the low frequency performance. This aerial is designed and manufactured in Japan to exacting standards. The DA3000 is supplied with 15m of quality RG58/U coaxial cable terminated in a BNC plug for the radio connection and a TNC plug in the aerial base. Clamps are also provided to fasten to a suitable pole up to 52mm.

What is a discone:

For wide coverage in the VHF-UHF bands a compromise has to be met and the most popular aerial is a discone (a disk of elements over a cone of elements). Their appearance is like a large spider or umbrella without the covering material, the better models have about 16 elements... avoid disconses with only a few elements (such as six). Typical usable coverage starts from about 25 MHz and extends continuously to 500 MHz, 1300 MHz or even 2000 MHz. The coverage peaks and dips throughout it's range as the elements interact to provide the widest possible coverage. Due to their necessary construction discone aerials are a little prone to "wind noise" & possible damage in **severe** gales.

DA3000 discone antenna assembling

1. Screw two "A" elements diagonally with washers in upper screw holes of main unit.
2. Screw two "B" and four "E" elements (threaded) diagonally with washers in upper screw holes. (A-A vertical to B-B, E-E vertically another E-E)
3. Select two 'no mark' elements with threaded head and joint them with two "C" elements to be the longest elements. Insert two combined "C" elements to slant hole of main unit just below "A" elements and tighten set screws by wrench included.
4. Insert and tighten two "D" elements similarly just below "B" elements.
5. Insert and tighten four "E" elements (non threaded) below each "E" elements (threaded) of above 2.
6. Attach two mast mounting brackets to aluminium pipe with proper spacing of approx. 300mm.
7. Feed coaxial cable "TNC" plug side through aluminium pipe and connect the plug to the main unit.
8. Insert the main unit into aluminium pipe and tighten a screw.
9. Install whole unit to suitable mast (not supplied) by "U" shape bolts.

Useable frequency range:	25MHz to 2GHz
Impedance:	50 OHM
Acceptable support mast:	30 - 52mm diameter
Size:	height approx 1m, diameter approx 0.9m
Coaxial cable:	15m of Quality RG58/U with BNC plug
Weight:	Approx 1kg



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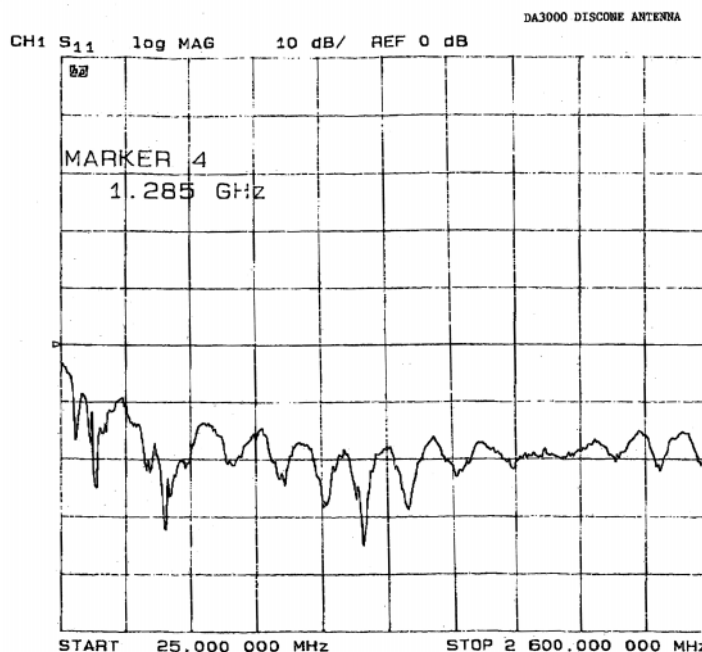
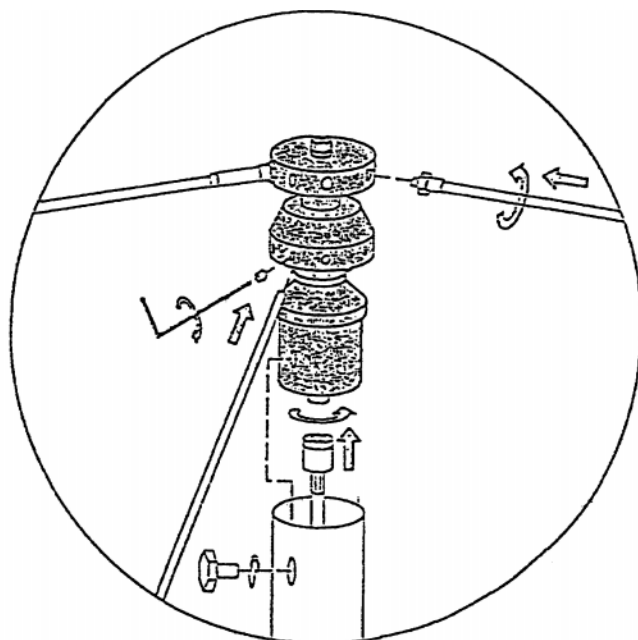
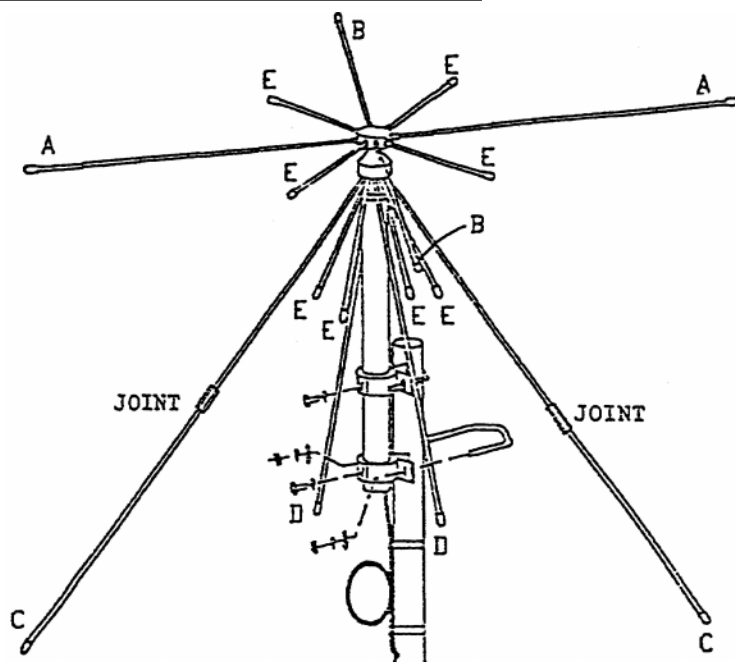
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Review - AOR Base Scanning Aerials, DA3000

Chris Lorek reviews a pair of ultra-wideband aerials matching today's super-wideband scanners

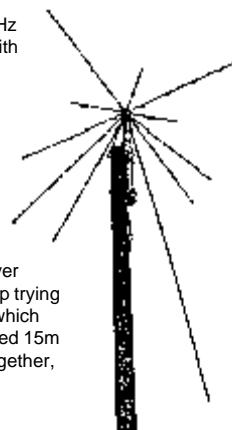
Our recent guide to scanner aerials, published in *scanners international* a few months ago, must have wetted some appetites! No sooner was it in print, the editorial team had been asked to review a couple of base station types for the benefit of the readers. For this, they chose a pair of very different wideband aerials from those scanner specialists AOR, the DA-3000 discone and the amplified 'WA' versions, these arrived at the door within a few days of asking - that's service for you!

Following this, AOR were kind enough to lend me their latest AR3000A 100kHz-2036MHz scanner (reviewed in last month's issue) which provide a useful 'test bed' for comparison with my existing scanner aerial system over a slightly longer period.

Physical Features

The DA3000 has 16 elements in total, these being made from stainless steel to protect against the ravages of the weather. It is, of course, designed for outdoor mounting, and the termination moulding for the disc/cone elements is also well sealed. The coaxial termination is fitted within the 300mm supporting tube supplied, to again protect it from the elements. A pair of supplied mast clamps let you fit the assembly on to the support pole of up to 52mm diameter (see the accompanying photo).

As for the size of the aerial, well its maximum dimensions are given as a height of just over 1m with a diameter of 0.9m, although the different length elements did cause me to give up trying to accurately measure it! The whole assembly is fairly light, weighing in at just over 1kg which should make installation fairly easy, and to help you further a pre-assembled and terminated 15m length of 50 ohm coax is also supplied. The discone took me around 20 minutes to put together, clear pictorial instructions supplied which made the job easier than I'd first expected.



The DA3000 Discone

The usual form of discone you see is made up of a number of rods, simulating a horizontal 'disc' above a 'cone' of elements, the disc and cone elements being of an individual dimensions. The ratio of disc/cone dimensions, plus the physical size of this in the first place, decided the frequency coverage of the aerial. This usually encompasses around two octaves of frequency i.e. 100-400MHz, or 150-600MHz, and so on. 'Staggering' the element dimensions, i.e., by having 50% of these shorter than the other, may be used to achieve a wider overall bandwidth.

However AOR have gone a few steps further, and from the accompanying photograph you may be able to see that the widely differing element lengths are used, with a large maximum/minimum ratio to thus give a wide bandwidth. Inductive loading on one element is even used to attain the lower frequency range, the overall result being a specified 25MHz-2000MHz receiver range.

On Air

I connected the DA-3000 to a four-way aerial switch at my 'listening post' end, the other switch positions being connected to my 145/435MHz colinear, a 'normal' discone, and a wideband 14MHz-30MHz HF dipole system. Careful listening and noting down signal strengths showed the DA3000 to have an excellent all-round performance. Not quite as good as separate 'dedicated' aerials for extremes of frequency range, but certainly better all round than any single narrow-band aerial.

In use, I wouldn't like to think the VSWR (i.e. the impedance match) would be low across the range, for example to allow it to be used with a transmitter. Indeed AOR warn that it is a receiver only aerial (yes their UK-product leaflets speak in English by not calling it an antenna!) so don't try using your transmitter into it if you value your power amplifier circuit! This is unlike some of the 'traditional' discones, which cover a much narrower frequency range band but can be used for transmit reasonably safely.

Conclusions-DA3000

After a period outdoors, unlike my other discone (where the elements tend to fall off after being used as a handy bird perch for all of the local starlings) it continues to work well, although I'd possibly hate to think what might happen if a large seagull or the like was to take a fancy to it. It provided a good performance across a wide frequency range, and being a 'passive' (rather than amplified) aerial it should guard against the possible scanner receiver 'overloading problems' of smaller 'active' aerial with built in wide-band amplifiers. If you can manage to get one up, I'd certainly recommend it.

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